

1955

WEED CONTROL

In Field Crops

Stanford N. Fertig and Marvin M. Schreiber

Chemical Weed Control Is A Precision Job

How To Mix Spray Materials

Read the label.

1. Be sure you have the recommended chemical for the job (2,4-D or MCP).
2. Be sure you have the recommended formulation (amine or ester).
3. Be sure you know the pounds of actual chemical per gallon. It is on the label.
4. Know whether the chemical is poisonous (the label will tell).
5. Be sure you know what precautions to observe.

Measure all chemicals accurately.

Do not guess!

Milk bottles of 2-quart, 1-quart, and pint sizes are satisfactory for liquid measure.

Remember, the recommendations are on an acre basis.

If you are to spray corn post-emergence (from 4 to 10 inches tall), the recommendation calls for 1 pint of 2,4-D amine or $\frac{1}{2}$ pint of 2,4-D low-volatile ester per acre. If your sprayer is calibrated to put on 10 gallons of water per acre, add 1 pint of 2,4-D amine for each 10 gallons of water that the spray tank holds. The amount of water used is not critical except where indicated in the recommendations. *The amount of chemical is critical!*



How To Check Your Sprayer

1. Make certain all hoses are good and all connections are tight.
2. Make certain you have a clean tank, boom, and screens.
3. Make certain you have the correct nozzle for the job and that all are the same size.
4. Make certain your pressure gauge is accurate and correctly set.
5. Know what speed you must travel, and calibrate tractor or other spray vehicle accordingly.

Note: If your tractor does not have a speedometer, you can determine the amount of water applied per acre at the speed you wish to travel and the pressure you wish to use with a calibrating jar. If you change the speed or pressure, you must change the amount of water applied and, therefore, calibrate the sprayer again.

Steps in Actual Application

1. Re-check pressure and speed and be sure to keep them the same as when calibrating was done.
2. If you use wettable powder, mix it thoroughly before you start.
3. Do not spray too close to sensitive crops, such as tomatoes, melons, and ornamentals.

1955 Chemical Weed Control Recommendations

| CROP | CHEMICALS | RATE PER ACRE* | REMARKS |
|---|--|--|--|
| CORN Pre-emergence For trial use (apply at planting) | Dow Premerge or Sinox P.E. | 2 gallons per acre in 30 gallons of water | Application made at planting time. Mount spray nozzles on planter. Treat 10- to 12-inch band directly over row. Six pounds (2 gallons of chemical) should treat 3 acres. Reduces competition in row for 4 to 6 weeks. In some cases, has resulted in suppression of perennial grasses. |
| Pre-emergence (apply from 3 to 5 days after planting) | 2,4-D low volatile ester | 3 pints in 5 to 15 gallons of water | Use pre-emergence only on heavy soils. Injury often occurs on light soils if rain follows treatment. Low-volatile esters safer and more effective than amines. Pre-emergence desirable where moisture con- ditions may prevent early cultivation. May be ineffective if dry weather follows treatment. |
| Post-emergence (corn 4 to 10 inches tall) | 2,4-D amine or 2,4-D low volatile ester | 1 pint per acre ½ pint per acre | Treatment at this stage is strongly recommended. Corn at this stage is most resistant to treatment and the broadleaved weeds are most susceptible. Some leaf rolling may occur. Normally not serious with recovery rapid. More noticeable where hot, dry weather follows treatment. |
| Post-emergence (corn from 10 to 24 inches tall) | 2,4-D amine | 1½ to 2 pints in 5 to 15 gallons of water | Most of the serious injury on corn has been due to treating too late. If treatment is made after corn is 10 to 12 inches tall, use drop pipes and keep spray off corn leaves. |
| OATS or SPRING BARLEY From 2 to 6 inches tall (seeded, to al- falfa, birdfoot, or clovers) | Dow Premerge† or Sinox P.E. | 1 to 1½ quarts in 30 gallons of water | Treatment must be applied when weeds are seedlings. Slight to severe burning of oats may occur, depending on temperature. Re- covery rapid. Height of oats not so important as size of weeds. The weeds must be seedlings. Do not use 2,4-D or MCP at this stage. See below. |
| From 6 to 15 inches tall (seeded to al- falfa, birdfoot, or clovers) Good canopy essential | MCP or 2,4-D amine | ½ pint to 1 pint of MCP‡ (see footnote). ½ pint of 2,4-D, 5 to 7 gallons of water | Canopy of weeds and oat plants to protect legume is essential. Correct amount of chemical extremely important. Be sure to cal- ibrate equipment. Alfalfa and birdfoot trefoil most susceptible. Red clover most resistant. Keep pressure down (from 30 to 40 pounds). |
| From 4 to 5 inches tall (not seeded to legume) | 2,4-D amine | ½ to 1 pint in 5 to 15 gallons of water | If most of weeds fall in <i>easy-to-control</i> group, use ½ pint. Where hard-to-kill weeds are present or spraying is on late side, use more. 2,4-D amine is most economical chemical available. Oats most susceptible of cereal grains; barley most resistant. |
| WINTER WHEAT or BARLEY Fall treatment (to be spring seeded to legume) | 2,4-D amine | ¾ pint in 5 to 15 gallons of water | Fall treatment has resulted in injury to crop. Crop should be at least 4 to 6 inches tall. Suggested only where yellow rocket or vetch is serious problem and legume seedling to be made in early spring. |
| Spring treatment and seedling | 2,4-D amine | ½ to 1 pint in 5 to 15 gallons of water | Apply just before jointing. Avoid treatment in "joint" or "bend" of stem. Has been best injury at full tiller stage, 6 to 8 inches. |

4. Reduce danger of drift by spraying at appropriate time. Keep pressure down (from 30 to 40 pounds). Know which way the wind is blowing.
5. Be sure the crop is at the stage of growth recommended for the chemical and for the amount of the chemical you are using.

Remember, it only takes one mistake!

New Herbicides

NEW herbicidal materials are constantly being produced and tested for potential agricultural use. The following is a brief description of several of these materials now being tested at the College of Agriculture with the hope that they may help to solve some of the weed problems in New York State.

Dalapon, a new grass killer developed recently, has shown promise for control of quackgrass and has shown to be quite selective on bedstraw in birdsfoot trefoil. (See recommendation.)

Chloro IPC, a not-so-new grass killer, is now being produced by several chemical companies. Its greatest success has been on cotton in the South, but in recent years it has quite effectively controlled chickweed in forage legumes, particularly alfalfa.

MH-40, otherwise known as **Maleic Hydrazide**, has been known for some time as a vegetable storage chemical as well as an effective herbicide. It is presently being tested for the control of perennial grasses, such as quackgrass, in several agronomic crops.

CMU, first developed as a soil sterilant of the permanent type, has shown promise against both annual and perennial grasses and broad-leaved weeds. Recent research has

been to determine its value as a selective spray for pre-and post-emergence application.

Amino Triazole, first developed as a defoliant for cotton and other crops, is now being tested as a herbicide to determine its potentialities as a grass and perennial weed killer.

Silvex, a new brush killer recently developed, has been found by some to be safer to use where susceptible crops are present.

Kuron is the trade name for the low-volatile ester formulation of Silvex.

Control of Weeds

In New and Established Legumes

The use of chemical for the control of yellow rocket is still dependent on the severity of the problem. Generally it is not recommended unless the infestation makes the difference between a first cutting and no first cutting. This is the farmers' choice. Both 2,4-D and MCP markedly reduce the yield and stand of alfalfa and birdsfoot trefoil.

There is, however, a solution. Put up the first cutting as grass silage. Grass silage is preferred over hay for the simple reason that cows will not eat hay containing high percentages of yellow rocket. This is particularly true when the first cutting is late and the weed is more mature. On the other hand, the first cutting of grass silage with a high percentage of yellow rocket is generally eaten. Also, when the first cutting is taken for hay-crop silage, the protein value is, of course, higher because the crop and the weeds are at an earlier stage of growth.

Recent studies have shown that yellow rocket has a relatively high percentage of protein, from about 15 per cent at full bloom to about 12 per cent at three-fourths pod forma-

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| From 6 to 15 inches tall (seeded to al- falfa, birdfoot, or clovers) (Good canopy essential) | MCP or 2,4-D amine | 1/2 pint to 1 pint of MCP (see footnote) 1/2 pint of 2,4-D, 5 to 7 gallons of water | Canopy of weeds and oat plants to protect legume is essential. Correct amount of chemical extremely important. Be sure to calibrate equipment. Alfalfa and birdfoot trefoil most susceptible. Red clover most resistant. Keep pressure down (from 30 to 40 pounds). |
| From 4 to 5 inches tall (not seeded to legume) | 2,4-D amine | 1/2 to 1 pint in 5 to 15 gallons of water | If most of weeds fall in <i>easy-to-control</i> group, use 1/2 pint. Where hard-to-kill weeds are present or spraying is on late side, use more. 2,4-D amine is most economical chemical available. Oats most susceptible of cereal grains; barley most resistant. |
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| Spring treatment (seeded to legume) | 2,4-D amine | 1/2 to 1 pint in 5 to 15 gallons of water | Apply just before jointing. Avoid treatment in "joint" or "boot" stage. Suggested only where yellow rocket or vetch is serious problem and legume sowing to be made in early spring. |

4. Reduce danger of drift by spraying at appropriate time. Keep pressure down (from 30 to 40 pounds). Know which way the wind is blowing.
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There is, however, a solution. Put up the first cutting as grass silage. Grass silage is preferred over hay for the simple reason that cows will not eat hay containing high percentages of yellow rocket. This is particularly true when the first cutting is late and the weed is more mature. On the other hand, the first cutting of grass silage with a high percentage of yellow rocket is generally eaten. Also, when the first cutting is taken for hay-crop silage, the protein value is, of course, higher because the crop and the weeds are at an earlier stage of growth.

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Canopy control is very important. Apply just before plowing or at full tiller stage to get best possible canopy. Keep pressure down to 30 to 40 pounds. Alfalfa and birdsfoot trefoil most susceptible legumes. Be careful!

NEW or ESTABLISHED LEGUME SEEDINGS
Alfalfa and birdsfoot trefoil
Red clover, ladino, and mixtures containing some alfalfa

Canopy essential

2 pints per acre

2 pints or
MCP amine

$\frac{1}{2}$ to 1 pint depending on the product (see footnote)

No chemicals have yet proved satisfactory for weed control in these two legumes

PERMANENT PASTURES
Good management
2,4-D 1:w volatile ester or amine

Mowing machine, lime, fertilizer
1 pint to 3 pints in 10 to 30 gallons of water

Chemical Renovation
TCA
25 pounds. For control of broadleaved weeds, 2,4-D may be added

Good management is normally required to control perennial pasture weeds.

The amount of 2,4-D required depends on the weed species present. More than one treatment is normally required to control perennial pasture weeds.

This is not a general recommendation for New York. Some interest has been shown, and in experiments at other stations the method has shown promise. As much as 25 pounds of TCA kills existing sod. The method is not a replacement for plowing where plowing is possible. Treatment should be made on closely grazed or mowed areas. Thorough discing from 4 to 6 weeks after treatment recommended. Use of treatment on low-value land questionable because of cost.

PERENNIAL WEED CONTROL BEDSTRAW (for trial use)
Horse Nettle
Milkweed
Quackgrass
Thistles

Dalapon
2,4-D + 2,4,5-T
TCA
MCP or 2,4-D

10 pounds per acre in 30 gallons of water

2 or 4 quarts[§]
Good coverage important (see footnote)

80 to 100 pounds per acre

3 to 6 pints[‡] (see footnote)
3 pints

Fall treatment looks better than spring or summer. Where bedstraw is scattered, use spot treatment. Dalapon normally takes out the grasses (timothy, bromine, etc.) Birdsfoot has not been damaged by this treatment.

The best control of Horse Nettle has been obtained with 2,4-D + 2,4,5-T. One treatment will not give 100 per cent control. Make first treatment when Horse Nettle is in bloom. New plants will come up from root stocks and seed. Several seasons are required for control.

No selective chemical has been found for milkweed. Cutting or hand pulling at any time prior to pod formation is desirable.

MCP more effective for thistle control than 2,4-D. An application of 1.5 pounds during pre-bloom stage has been most effective. Use enough water to wet the entire plant. A combination of mowing and chemical treatment speeds up control. Spot treatment recommended where clovers are present.

Treatment of chicory in the fall or spring while the plants are in the

Spring treatment (after legume seed-ing)

2 pints per acre

Alfalfa and birdsfoot trefoil

Red clover, ladino, and mixtures containing some alfalfa

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Treatment of chicory in the fall or spring while the plants are in the

| | | |
|--|--|---|
| or 2,4-D | 3 pints | 1.0 pounds during pre-panicle stage (less than 10 inches above ground). Use enough water to wet the entire plant. A combination of mowing and chemical treatment speeds up control. Spot treatment recommended where clovers are present. |
| Chicory | 2,4-D | 1 pint to 1 quart in 10 to 15 gallons per acre |
| Wild onion | 2,4-D Ester | 3 pints in 10 to 15 gallons of water |
| SUDAN GRASS | See recommendations for oats and spring barley | |
| WOODY PLANTS As summer foliage spray (roadsides, fence-rows, pastures, waste places, and the like) | 2,4-D + 2,4,5-T followed by 2,4,5-T if necessary | From 4 to 6 pounds in 150 gallons of water |
| Ammate | | 75 pounds in 100 gallons or $\frac{1}{4}$ pound per gallon of water |
| As basal spray | 2,4-D + 2,4,5-T or 2,4,5-T | 6 pounds in 40 gallons No. 2 diesel fuel 4 pounds in 40 gallons No. 2 diesel fuel |
| Stump treatment | 2,4-D + 2,4,5-T or 2,4,5-T | 8 pounds in 40 gallons No. 2 diesel fuel 6 pounds in 40 gallons No. 2 diesel fuel |

Treatment of chicory in the fall or spring while the plants are in the vegetative stage gives good control. Community or county control programs recommended.

The control of wild onion is difficult. One treatment will not do the job. Treatment of wild onion in pastures, in the spring and fall over a 3-year period will get results. Spot treatment can be used for scattered plants. In wheat, $\frac{1}{2}$ pound of 2,4-D applied in the spring reduces the number of aerial bulbils formed.

Chemical treatment may stunt Sudan grass. Allow at least 1 foot of growth after treatment before grazing. Danger of prussic-acid poisoning.

Effective treatment for brush from 4 to 6 feet tall. Taller brush should be cut and regrown sprayed. Leaves and stems of all plants must be thoroughly wet. Use 2,4,5-T in oil as follow-up basal spray to get the difficult-to-kill species not controlled by foliage treatment. Keep livestock off areas where choke cherry or wild cherry have been sprayed. *Be cautious of drift to susceptible crops.*

One application of ammate as effective as 2,4-D + 2,4,5-T. Ammate is a contact herbicide and kills all above-ground parts which it contacts. The use of a spread-sticker normally gives better coverage and, therefore, better control.

For best results, a uniform cover on the trunk or stem of plant from ground line to height of 18 inches is recommended. Basal spray gives as good or better control than foliage. Can be applied throughout season. *Avoid treatment just before plants leaf out in spring. Kill has not been consistent.*

Good kill is the result of good coverage. An excess of spray to run down onto roots essential.

- Be sure to calibrate equipment. Use correct nozzle tips and pressure. Severe injury to crops can result from "guess work" applications. Too high pressure increases danger from drift.
- † The dinitro (Dow Premerge and Simon P.E.) are affected by weather. Do not use during hot, humid weather. Dinitro stain the skin. The higher the temperature the greater the burn on the crop.
- ‡ MCP is available either as a 2- or 4-pound per gallon product. For the 4-pound material, use $\frac{1}{2}$ pint. For the 2-pound material, use 1 pint.
- § 2,4-D + 2,4,5-T is also available as a 2- or 4-pound product. Read label to know which product you are using and the amount.

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tion. Crude fiber, however, at the same stages of growth goes from 25 per cent to 35 per cent, respectively.

Thus, the true value of forage containing a high percentage of yellow rocket is realized more as hay-crop silage than as hay. The seed problem is less critical in the silage method than in making hay because the ensiling process usually destroys all viable seeds. Also, the problem of weeds spread in the manure is greatly reduced.

In Permanent Pastures

The old adage, "An ounce of prevention is worth a pound of cure," is doubly true when one considers the problem of weed control in permanent pastures. It has been estimated that more than 75 per cent of the weed problems in permanent pastures are due to poor management. This is a rather conservative estimate. This fact is hard to believe when one considers the extreme importance of high-producing pastures in view of the present economic picture facing the farmers of this State. Pastures are still the cheapest and most efficient source of feed.

The ounce of prevention mentioned is good management. The pound of cure is chemical treatment which does not always give complete cure. In the weed-control chart, good management is placed above chemical treatment; first things come first.

Lime, fertilizer, and the mowing machine are the most effective tools for controlling weeds in pastures. Weeds are great competitors — give them a chance to become established and they will take over. When the legume species start to go out be-

cause of an unfavorable lime level in the soil, weeds take their place. As the fertility level tends to drop, other adaptable weed species take over. The final result is a run-down pasture not only in feed production but in quality.

By the proper use of the mowing machine after each grazing period, the production and spread of weed seed such as thistles and milkweed can be almost entirely eliminated.

This is not discrediting chemical control, but rather emphasizing the fact that chemicals are not the end in themselves. Chemicals are only supplemental to all the other methods of weed control. The prevention of weed infestations in pastures is directly related to good management. Good pasture management is good farming.

Clean Seed

A preliminary investigation on the quality of oats seedings has just been completed in Tompkins County. The principal points under study were the weed-seed content and the efficiency of cleaning equipment.

It was found that homegrown seed cleaned by a commercial cleaning plant was the most common source of seed oats used by the farmers of that county. The most significant point determined by this study was that 65 per cent of the samples tested would have been classed "rejected" because of their weed-seed content. By projecting these findings over the State, it becomes quite evident that the weed problems in small grains, such as oats, are being worsened by the use of improperly cleaned seed.

Don't plant weed seeds.

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